INCH-POUND
ATPD 2236
9 January 1998
SUPERSEDING
MIL-DTL-62338B
24 March 1992

PURCHASE DESCRIPTION

MULTIPLE LAUNCH ROCKET SYSTEM (MLRS) M993,
PROCESSING FOR STORAGE AND SHIPMENT OF

This purchase description is approved for use by the U.S. Army Tank-automotive and Armaments Command, Department of the Army, and is available for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This purchase description covers the processing for storage and shipment of the Multiple Launch Rocket System (MLRS), M993 (see 1.2 and 6.1).

1.2 Classification. Processing is to be one of the following levels (see 6.2).

Level A - Maximum military protection. Level A is the processing required for the protection of vehicle during shipment, handling, and storage exceeding 90 days from the date of actual processing. This level does not provide for driveway capability. It does provide for domestic or overseas shipment, including open deck loading.

Level B - Minimum military protection. Level B is the limited processing required for the protection of vehicle during shipment, handling and storage not to exceed 90 days from date of actual processing. This level provides for driveway capability, when specified, and domestic or overseas shipment (excluding open deck loading).

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: U.S. Army Tank-automotive and Armaments Command, ATTN: AMSTA-TR-E/BLUE, Warren, MI 48397-5000, by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document, or by letter.

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2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3, 4, and 5 of this purchase description. This section does not include documents cited in other sections of this purchase description or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirement documents cited in sections 3 and 4 of this purchase description, whether or not they are listed.

2.2 Government documents.

2.2.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DoDISS) and supplement thereto, cited in the solicitation (see 6.2).

SPECIFICATIONS

FEDERAL

A-A-203	- Paper, Kraft, Untreated.
A-A-208	- Ink, Marking, Stencil, Opaque (Porous and Non-Porous Surfaces).
A-A-374	- Sodium Bicarbonate, Technical.
A-A-883	- Tape, Pressure Sensitive Adhesive, Masking.
A-A-1800	- Varnish, Oil, Spar.
A-A-52518	- Tire, Pneumatic, Retread and Repair Materials.
A-A-52624	- Antifreeze, Multi-Engine Type
O-S-801	- Sulfuric Acid, Electrolyte (for Storage Batteries).
P-D 220	- Detergent, General Purpose.
UU-T-81	- Tags, Shipping and Stock.
VV-L-800	- Lubricating Oil, General Purpose, Preservative (Water-Displacing, Low Temperature).
MMM-A-179	- Adhesive: Paper Label.
PPP-B-601	- Boxes, Wood, Cleated-Plywood.
PPP-B-621	- Boxes, Wood, Nailed and Lock-Corner.

DEPARTMENT OF DEFENSE

MIL-B-117	- Bags, Sleeves, and Tubing.
MIL-C-450	- Coating Compound, Bituminous Solvent Type, Black (for Ammunition).
MIL-C-5501	- Caps and Plugs, Protective, Dust and Moisture Seal, General Specification.
MIL-B-11188	- Batteries, Storage: Lead-Acid, General Specification for (Metric).
MIL-PRF-16173	- Corrosion Preventative Compound, Solvent Cutback, Cold Application.
MIL-D-16791	- Detergents, General Purpose (Liquid, Nonionic).
MIL-L-21260	- Lubricating Oil, Internal Combustion Engine, Preservative and Break-In.
MIL-T-22085	- Tapes, Pressure-Sensitive Adhesive, Preservation and Sealing.
MIL- B-22191	- Barrier Materials, Transparent, Flexible, Heat Sealable.
MIL-T-37402	- Tester, Antifreeze Solutions.
MIL-P-46002	- Preservative Oil, Contact and Volatile Corrosion Inhibited.
MIL-H-46170	- Hydraulic Fluid, Rust Inhibited, Fire Resistant, Synthetic Hydrocarbon Base.
MIL-T-50036	- Talc, Technical, T1 and T3.
MIL-P-52905	- Paint, Camouflage, Removable.
MIL-A-53009	- Additive, Antifreeze Extender, Liquid Cooling Systems.
MIL-T-60394	- Tape, Pressure-Sensitive Adhesive Film Foam, Double-Coated (For Use with Ammunition).
MIL-D-81298	- Dye, Liquid for, the Detection of Leaks in Aircraft Fuel Systems.

STANDARDS

DEPARTMENT OF DEFENSE

MIL-STD-129	- Marking for Shipment and Storage.
MIL-STD-2073-1	- DOD Material, Procedures for Development and Application of Packaging Requirements.
MS 20995	- Wire, Safety or Lock.

(Unless otherwise indicated, copies of the above specifications, standards, and handbooks are available from the Defense Automated Printed Service Standardization Documents Order Desk, Building 4D,700 Robbins Avenue, Philadelphia, PA 19111-5094.)

2.2.2 Other Government documents, drawings, and publications. The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation.

DOCUMENTS

DEPARTMENT OF TRANSPORTATION (DOT)

Federal Motor Carrier Safety Regulations
Hazardous Materials Regulations

(Applications for copies should be addressed to the Department of Transportation, Hazardous Materials Regulations Board, Washington, DC 20590.)

PURCHASE DESCRIPTIONS

ATPD 2241 - Vehicles, Wheeled: Preparation for Shipment and Storage of.

(Copies of this purchase description are available from the U.S. Army Tank-automotive and Armaments Command, ATTN: AMSTA-TR-E/BLUE, Warren, MI 48397-5000.)

2.3 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DoD adopted are those listed in the issue of the DoDISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DoDISS are the issues of the documents cited in the solicitation (see 6.2).

AMERICAN HARDBOARD ASSOCIATION (AHBA)

ANSI/AHBA A135.4 - Basic Hardboard, Standard for.

(Application for copies may be obtained from the American Hardboard Association,1210 W. Northwest Hwy. Palatine, IL 60067.)

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D1974	- Standard Practice for Methods of Closing, Sealing, and Reinforcing Fiberboard Boxes (DoD Adopted).
ASTM D3953	- Standard Specification for Strapping, Flat Steel and Seals (DoD Adopted).
ASTM D5330	- Standard Specification for Pressure Sensitive Tape for Packaging, Filament-Reinforced (DoD Adopted).
ASTM D5486	- Standard Specification for Pressure-Sensitive Tape for Packaging, Box Closure and Sealing (DoD Adopted).

(Application for copies should be addressed to the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.)

ASSOCIATION OF AMERICAN RAILROADS

Section No. 1	- General Rules Governing Loading of Commodities on Top Cars.
Section No. 6	- Rules Governing the Loading of Department of Defense Material on Open Top Cars.

(Application for copies should be addressed to the Association of American Railroads (AAR), Publication Dept. 50 F Street NW, Washington, DC 20001-1564.)

(Non-Government publications are normally available from the organizations which prepare or which distribute the documents. These documents also may be available in or through libraries or other informational services.)

2.4 Order of precedence. In the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 Level A

3.1.1 First article. Unless otherwise specified (see 6.2), one of the first ten production processed vehicles shall be subjected to first article inspection in accordance with 4.2. Approval of this vehicle shall not relieve the contractor of his obligation to process all vehicles in accordance with this purchase description. Unless otherwise specified by the acquisition activity,

any change to materials or design after approval shall require that additional vehicles be inspected as specifies in 4.2. The Government representative shall select the vehicles to be inspected.

3.1.2 Government furnished equipment (GFE) Unless previously accomplished, GFE (other than installed) shall be packaged, packed, and marked in accordance with the individual document for the specific item. GFE shall be stowed with basic issue items (BII).

3.1.3 Preservatives and atomized equipment. Unless previously accomplished, GFE (other than installed) shall be packaged, packed, and marked in accordance with the individual document for the specific item. GFE shall be equipped with moisture separators every 50 feet or fraction thereof.

3.1.4 Vehicle processing. For records of vehicle processing, see 6.2.

3.1.5 Disassembly. Projecting parts whose removal will accomplish desired cube reduction and parts susceptible to damage and pilferage shall be removed from the vehicle. Removed bolts, nuts, screws, pins and washers shall be placed in one of the mating parts and secured. Bare metal surfaces of removed parts shall be preserved, packaged, packed in accordance with MIL-STD-2073-1, identified, and securely stowed within the vehicle.

3.1.5.1 Side view mirror. Removed side view mirror, and related hardware, shall be packaged in a type CF, class weather-resistant carton conforming to ASTM D1974. Carton shall be closed with tape conforming type I, class 1 of ASTM D5486, identified as to contents, and securely stowed within crew compartment.

3.1.5.2 Commander's hatch rubber bumpers. Rubber bumpers from top of cab shall be removed and packaged in a type CF, class weather-resistant carton conforming to ASTM D1974. Carton shall be closed with tape conforming to type I, class 1 of ASTM D5486, identified as to contents, and securely stowed within crew compartment.

3.1.5.3 Matchmarking. Parts removed from the vehicle shall be matchmarked when necessary to facilitate reassembly. Matchmarking information shall be put on cloth shipping tags conforming to type A of UU-T-81 or on metal tags using waterproof in or paint, and attached to mating parts. The marked cloth shipping tags shall be waterproofed with varnish conforming to A-A-1800 or adhesive conforming to MMM-A-179.

3.1.6 Record forms. Two copies of DA Form 2258 shall be completed with information that includes preservation accomplished and depreservation instructions. The Equipment Log Book Binder and one copy of DA Form 2258 (see 6.4) shall be placed in a bag conforming to type I, class B, style 2, 6 mil thick of MIL-B-117; the bag shall be closed by heat sealing and securely attached in the driver's compartment of vehicle. The other copy of

DA form 2258 shall be waterproofed with adhesive conforming to MMM-A-179 or sealed in a plastic bag, and securely attached in a conspicuous location on the exterior of the vehicle.

3.1.7 Cleaning and drying (see 4.6.2.1).

3.1.7.1 Interior of vehicle. Interior surfaces of vehicle shall be cleaned with solution of detergent conforming to P-D-220 or type I of MIL-D-16791, and water. Solution temperature shall not exceed 210 degrees Fahrenheit (°F); except, on the exterior surfaces of the windows, the temperature shall not exceed 160°F. Pressure shall not exceed 5 pounds per square inch (psi) measured 4 inches (in) from the nozzle. Cleaned surfaces shall be rinsed with clean water and dried. Care shall be taken during cleaning and rinsing operations to assure that no solution or water enters instruments, connections, or other components susceptible to water damage. Solution or water shall not accumulate and remain in cavities that cannot be drained. Vehicles with decals, markers, straps, and floor plates installed shall be hand cleaned with solution of P-D-220 or type I of MIL-D-16791, and water to prevent damage to these components. Cleaned surfaces shall be hand rinsed and dried.

3.1.7.1.1 Cleaning and drying of battery supports and retainers. Battery supports and retainers shall be cleaned with a solution of one-half pound of sodium bicarbonate conforming to A-A-374 per gallon of water. After cleaning, cleaned surfaces shall be flushed with clean water, then thoroughly dried. Dried surfaces shall then be preserved in accordance with 3.1.8.2.

3.1.7.1.2 Cleaning and drying of backrests and seats. The backrest and seat cushions shall be cleaned with a solution of detergent conforming to P-D-220 or type 1 of MIL-D-16791 and warm water. After cleaning, the cushions shall be wiped with cloths saturated with clean water to remove cleaning solution or water. After rinsing, the cushions shall be dried, then protected in accordance with 3.1.9.3.

3.1.7.2 Exterior of vehicle The exterior of vehicle shall be cleaned using a solution of detergent conforming to P-D-220, or type 1 of MIL-D-16791 and warm water or steam. Cleaning shall remove all foreign matter. After cleaning, cleaned surfaces shall be rinsed with clean water or steam and thoroughly dried. Care shall be taken to avoid entry of water or steam into the driver and engine compartments.

3.1.8 Preservation

3.1.8.1 Relubrication. If the vehicle has been operated more than 75 miles since lubrication, or after the vehicle has been cleaned in accordance with 3.1.7.2, the vehicle shall be relubricated using materials conforming to drawings, specifications, or lubrication order applicable to the vehicle. All exposed oil can points such as, but not limited to, levers, locking levers, locking bars, locking pins, pintle pins, hinge pins, hinges, strikers, wing nuts, door locks, hand-

operated locking knobs, latches, linkages, and threaded ends of yokes and related clevis pins, shall be coated with lubricant conforming to VV-L-800. Excess lubricant shall be removed after coating.

3.1.8.2 Preservation of battery supports and retainers. Top battery supports and retainers shall be preserved with compound conforming to MIL-C-450.

3.1.8.3 Transmission and final drives. Final drives shall contain lubricating oil conforming to grade 15W-40 of MIL-L-21260, and be at operating level. Transmission shall be drained of oil and refilled to operating level with lubrication oil conforming to grade 15W-40 MIL-L-21260. Engine shall be started and, after initial warm-up, driven until engine is at normal operating temperature (165°F to 195°F). After the warm-up the following procedures shall be executed two (2) times minimum:

a. Operate vehicle in 3rd range at 30 miles per hour (MPH) minimum.
b. Execute full left turn and full right turn (pivot).
c. Reverse.
d. Application of service brakes.

Following the above operations, the oil shall be rechecked and filled to operating level. NOTE: DA Form 2256 shall be annotated with the grade of preservation oil used.

3.1.8.4 Cooling System. The cooling system shall be protected by one of the following procedures (see 4.6.2.3 and 6.2):

a. For shipments to, and storage in, areas where the temperature drops below minus 40°F, systems shall be protected as specified in 3.1.8.4.3.
b. For shipment and storage within the bounds of 30 degrees north latitude and 20 degrees south latitude, except continental United States, systems shall be protected as specified in 3.1.8.4.2.
c. For all other shipments, cooling systems shall be protected as specified in 3.1.8.4.1.

NOTE: DA Form 2258 (see 3.1.6) shall be completed to indicate coolant used.

3.1.8.4.1 Water and antifreeze procedure. The cooling system shall be filled to operating level with a clean solution consisting of equal parts by volume of antifreeze (ethylene glycol) conforming to A-A-52624, and water. The engine shall be operated until a temperature has been reached that causes the thermostat to open, to assure complete mixing and distribution of antifreeze solution. A warning tag, bearing the information “COOLING SYSTEM FILLED WITH WATER AND ANTIFREEZE SOLUTION (ETHYLENE GLYCOL) IN EQUAL PARTS BY VOLUME - DO NOT DRAIN”, shall be securely attached to the surge tank filler neck.

3.1.8.4.2 Water and corrosion inhibitor procedure. The cooling system shall be filled with clean water up to the "ADD" mark in the surge tank. A corrosion inhibitor conforming to MIL-A-53009 shall be added in the proportion of five ounces of the inhibitor for each ten quarts of water. The inhibitor shall be dissolved in two quarts of warm water and poured into the surge tank while the engine is idling. More water shall be added, if necessary, to fill the cooling system to operating level. A warning tag, bearing the information "COOLING SYSTEM DOES NOT CONTAIN ANTIFREEZE - FILLED WITH WATER AND INHIBITOR', shall be securely attached to surge tank filler neck.

3.1.8.4.3 Antifreeze compound procedure. The cooling system shall be filled to operating level with antifreeze compound conforming to A-A-52624. The compound shall be used without dilution. A warning tag, bearing the information 'COOLING SYSTEM FILLED WITH ANTIFREEZE (ARTIC TYPE) - DO NOT DRAIN", shall be securely attached to the surge tank filler neck.

3.1.8.5 Engine crankcase preservation. The engine crankcase shall be filled to operating level with lubricating oil conforming to MIL-L-21260 of the seasonal grade specified in the applicable drawing, specification, or lubrication order. NOTE: DA Form 2258 shall be annotated with the type and grade of lubricant used.

3.1.8.6 Compression ignition engine. Compression ignition engine preservation shall be in accordance with 3.1.8.6.1 through 3.1.8.6.4 in an uninterrupted sequence.

3.1.8.6.1 Initial conditions. Prior to processing, engine shall be cooled to assure that the cylinder head temperature, measured at the injector nozzle flange surface of all cylinders, is not more than 100°F. Cooling shall be accomplished by induced air currents, circulation of engine coolant, or by waiting the period of time to arrive at the above specified temperature. When the ambient temperature exceeds 100°F, the engine shall be cooled to ambient temperature (see 4.6.2.4).

3.1.8.6.2 Fuel system and combustion chamber preservation. A portable auxiliary container with a filtering device and regulator valve shall be filled with preservative oil conforming to grade 1 of MIL-P-46002 to which has been added an oil-soluble red dye conforming to MIL-D-812988, in a concentration sufficient to impart a marked coloring to the oil. Position container to allow gravity feed to the engine. Disconnect the fuel line between the primary fuel filter and the fuel pump at the filter end. Connect this line to the auxiliary container containing preservative oil. Disconnect vehicle fuel return line at quick disconnect coupling. Connect a transparent plastic fuel line to the end of the disconnected fuel return line. Place the other end of transparent fuel line into a recovery container to collect the return oil.

Remove air duct at the intake air filter outlet and the turbocharger inlet. A 5 ½ inch (in.) diameter (dia) by 2 in. thick wooden air restrictor plug shall be installed into the air duct at the air filter end (see figure 1) and secured in position with the existing clamp. Return duct to its original position and secure it to the turbocharger and clamp. Do not reconnect duct to air filter outlet. The plug shall remain in place for processing, shipment, and storage. A warning tag, bearing the information "AIR INTAKE SYSTEM DISCONNECTED AND PLUGGED - REMOVE PLUG AND RECONNECT DUCT PRIOR TO STARTING", shall be prepared and secured in a conspicuous location within the driver's area.

Place the engine fuel control to the "ON" position. Open the regulator valve on the auxiliary container. Crank the engine with the starter (NOTE: Engine may fire for approximately 5 seconds) for not less than 30 seconds and not greater than 45 seconds. If the red-colored preservative oil is not observed within the 30 to 45 second period, rest the starter for a period of 3 minutes and repeat the cranking procedure.

CAUTION: Special precautions shall be taken to assure that the time limits specified are not to exceeded. Damage to the starter solenoid or hydrostatic lock may result.

Close the regulator valve on the auxiliary container and disconnect it from the fuel pump supply line and reconnect the fuel pump supply line to the primary filter. Remove the transparent fuel line, and reconnect the vehicle fuel return line at the quick disconnect coupling. Turn the vehicle fuel supply system (see 4.6.2.4).

3.1.8.6.3 Preservation through exhaust system and air intake of turbocharger. Atomize 1 ounce of preservative oil conforming to grade 1 of MIL-P-46002 into external exhaust opening. Seal the opening with tape conforming to type IV of MIL-T-22085. Remove the exhaust tube between the turbocharger and left exhaust manifold. Atomize 1 ounce of preservative oil conforming to grade 1 of MIL-P-46002 into the left exhaust manifold, then atomize 2 ounces of grade 1 of MIL-P-46002 into the right exhaust manifold and turbocharger. Replace the left exhaust tube. Remove air duct at the intake air filter outlet and the turbocharger inlet. Atomize 1 ounce of preservative oil conforming to grade 1 of MIL-P-46002 into the air inlet (toward engine) of the turbocharger. Reconnect air duct to turbocharger and secure with the clamp (see 4.6.2.4).

3.1.8.6.4 Preservative through oil level gage rod opening. Remove the oil level gage rod and atomize 6 ounces of preservative oil conforming to grade 1 of MIL-P-46002 into the crankcase through the gage rod opening. An extension of sufficient length to permit the nozzle to be within the crankcase (but not submerged in the crankcase oil) shall be used. Reinstall the gage rod. All openings to engine interior, including oil level gage rod opening and the oil filler cap, shall be sealed with tape conforming to type IV of MIL-T-220885.

WARNING TAG:

A red warning tag, bearing the information “ENGINE PRESERVED WITH VCI - DO NOT CRANK” and “BEFORE CRANKING, REMOVE TAPE FROM ALL SEALED AREAS (EXHAUST, OIL GAGE ROD AND OIL FILLER CAP)”, shall be placed in a conspicuous location within the driver’s compartment.

NOTE: DA Form 2256 shall be annotated to show the engine is preserved with grade 1 of MIL-P-46002 (see 4.6.2.4).

3.1.8.7 Lockout hydraulic reservoir. Hydraulic reservoir shall be filled with hydraulic fluid conforming to type I of MIL-H-46170.

3.1.8.8 Personnel heater and lines. Personnel heater main fuel line shall be disconnected at the heater. Seal the end of the disconnected fuel line with tape conforming to type II of MIL-T-22085. External exhaust opening shall be sealed with tape conforming to type II of MIL-T-22085. Prior to placing personnel heater in operation, remove tape from fuel line and exhaust opening. A warning tag, bearing the information “HEATER FUEL LINE DISCONNECTED AND SEAL. PRIORTO PLACING PERSONNEL HEATER IN OPERATION, REMOVE TAPE FROM FUEL LINE, RECONNECT FUEL LINE TO HEATER PRIOR TO STARTING HEATER.”, shall be secured to personnel heater switch.

3.1.8.9 Fuel tank preservation. The fuel tank shall be drained to the maximum extent possible. The fuel tank cap and filler screen shall be removed and coated with lubricating oil conforming to grade 30 of MIL-L-21260. A means shall be provided to verify the amount of residual fuel. The tank cap and filler screen shall be reinstalled (see 4.6.2.2).

3.1.8.9.1 Fuel tank security. After processing the fuel tank as specified (see 3.1.8.9), the fuel cap cover shall be closed and secured with a bolt and nut. Bolt shall have thread peened in such manner as to hamper removal of the nut.

3.1.8.9.2 Engine fuel shut-off handle. Engine fuel shut-off handle shall be placed in the “OFF” (full-up) position. A warning tag, bearing the information “FUEL SHUT-OFF HANDLE SHOULD ALWAYS BE POSITIONED IN ‘OFF’, (FULL-UP) POSITION, EXCEPT IMMEDIATELY PRIOR TO AND DURING ENGINE OPERATION.”, shall be prepared and secured in a conspicuous location in the driver’s area.

NOTE: Valve in “ON” (handle down) position has been found to allow hydrostatic block preventing vehicle operation.

3.1.8.10 Doors and hatches. Rubber seals around hatches and doors shall be coated with powdered talc conforming to type IV, class C of A-A-52518, or talc, technical, MIL-T-50036. For shipment, hatches and doors shall be closed and locked. Commander's hatch shall be locked from inside. All other doors shall be locked with a bolt and nut. Bolt shall have thread peened in such manner as to hamper removal of the nut, or nut shall be tack welded to the bolt.

3.1.8.11 Ventilation.

3.1.8.11.1 Hull drain plugs. The three drain plugs shall be removed from the hull. Bare metal surfaces of drain plug shall be preserved with compound conforming to grade 4 of MIL-PRF-16173. Preserved plugs shall be packaged as specified in 3.1.9.6. Place drain opening reducers, plastic plugs part number 5501/7-F27 conforming to MIL-C-5501 (see figure 2) into drain openings. The information, "REMOVE DRAIN REDUCERS, INSTALL DRAIN PLUGS BEFORE VEHICLE OPERATION.", shall be stenciled on the exterior of the vehicle using white or yellow paint conforming to MIL-P-52905. Stenciling shall be in characters not less than ¾ inch high.

3.1.8.12 Miscellaneous preservation. Except as otherwise specified, all exposed, unpainted metal surfaces on the exterior of the vehicle, except the track shoes, shall be coated with compound conforming to grade 1 of MIL-PRF-16173. All exposed, unpainted, unplated metal surfaces on the interior of the vehicle shall be coated with compound conforming to grade 4 of MIL-PRF-16173.

3.1.9 Packaging.

3.1.9.1 Dry charged batteries and cables. Dry charged batteries shall be installed and secured in the vehicle battery carrier. Battery cables shall be secured to battery carrier with ¾ in. tape conforming to type IV of ASTM D5330. Battery filler cap openings shall be sealed by placing a 2 in. wide by 3 mil thick piece of film conforming to type II of MIL-B-221991 over each filler cap opening with cap removed. The sheet shall be sufficient length to allow it to be depressed into the opening to the same depth as the filler plug. Filler caps shall be screwed or inserted into openings to form a complete seal without damaging the sheet. If batteries have been processed in accordance with MIL-B-11188, they need not be reprocessed as above.

3.1.9.2 Electrolyte. Electrolyte shall be packaged and packed in accordance with O-S-801, except that the exterior container shall conform to class 2 of PPP-B-621 or overseas type of PPP-B-601. Marking shall conform to O-S-801. The packed electrolyte shall be stowed in the same location as the BII and secured independently to permit separate removal.

3.1.9.3 Packaging of backrests and seats. Cushions of backrests and seats (see 3.1.7.1.2) shall be covered with paper conforming to A-A-203 with a basis weight of not less that 60pounds. The paper shall be secured with tape conforming to type I of A-A-883.

3.1.9.4 Fire extinguisher. Fire extinguisher shall contain a minimum of 90 percent of rated full charged. All seals shall be intact.

NOTE: DA Form 253 shall be completed and attached securely to each extinguisher (see 6.3).

3.1.9.5 BII. Unless otherwise specified (see 6.2), BII shall be processed, packaged, and packed in accordance with ATPD 2241. BII shall be stowed and secured in accordance with 3.1.9.5.1.

3.1.9.5.1 Stowage and securement of BII. BII and items removed for shipment shall be identified to the pertinent vehicle by serial number. (NOTE: BII and items removed for shipment shall not be identified to the pertinent vehicle by serial number, if vehicle has been rebuilt or revised at depot. BII shall be stored inside buildings, except during shipment. Packed BII and removed items shall be placed within the cargo compartment of the vehicle. Large wooden boxes shall be placed on the vehicle floor and shall be secured with 1-1/4 in. wide strapping conforming to type I, grade M, N or P of ASTM D3953. (NOTE: If BII and other containers are placed in fiberboard containers and it has been determined that 1-1/4 in. wide strapping will cause damage to containers, strapping width shall be reduced to ¾ in. wide). Strapping shall be secured in such a manner as to prevent any movement during transit and to prevent damage to containers or vehicle interiors. Corner protectors shall be used under all strapping.

3.1.9.6 Drain plugs. Preserved drain plugs (see 3.1.8.11.1), shall be packaged in a carton conforming to type CF, class weather-resistant of ASTM D1974. Carton shall be closed with tape conforming to type I, class 1 of ASTM 5456, identified as to contents, and securely stowed within crew compartment.

3.1.9.7 Air intake grille. The air intake grille shall be covered with hardboard (see figure 4) conforming to class 2, smooth both sides (S2S) of ANSI/AHA 135.4, 1/8 in. thick. Hardboard shall be secured in place by wiring conforming to MS20995 to screen as shown in figure 4.

3.2 Level B. Vehicles shall be processed in the same manner as specified for level A, with the following exceptions.

3.2.1 Transmission and final drives. Transmission and final drives shall contain operational lubricant as specified in applicable drawings, specifications, or lubrication orders filled to operating level. However, if these units contain lubricating oil conforming to grade 10 or 30 of MIL-L-21260, an additional amount of the same oil shall be added to attain operating level. Operating lubricants shall not be mixed with MIL-L-21260 except in an emergency.

NOTE: DA Form 2258 shall be annotated to indicate grade of lubricant or preservative oil used.

3.2.2 Engine crankcase. The engine crankcase shall contain normal operational lubricant as specified in lubrication order and filled to operational level.

NOTE: DA Form 2258 shall be annotated to indicate grade of lubricant used.

3.2.3 Engine preservation. The engine shall require no preservation for level B shipment and storage.

3.2.4 Personnel heater. The personnel heater shall be in ready-to-use condition.

3.2.5 Residual fuel. Unless otherwise specified (see 6.2), the vehicle shall be shipped without draining residual fuel from the fuel tank.

3.2.6 Backrests and seats. Cushions of backrests and seats shall not be covered. If cushions are received packaged, they shall be stowed as received in the crew compartment.

3.3 Materials. Materials shall be as specified herein and in referenced specifications and drawings. Material shall be free from all defects and imperfections that might affect the serviceability and appearance of the finished product.

3.3.1 Recycled, virgin, and reclaimed materials. There are no requirements for the exclusive use of virgin materials. The use of recycled or reclaimed (recovered) materials is acceptable provided that all other requirements of this purchase description are met (see 4.6.1 and 6.5.2).

3.4 Loading

3.4.1 Loading flat cars. Loading of vehicles on open top railroad cars shall be in accordance with the applicable requirements of the American Association of Railroads publications in section 1, General Rules Governing the Loading of Commodities on Open Top Cars and in figure 79, section 6, Rules Governing the Loading of Department of Defense on Open Top Cars.

3.4.2 Highway shipment. Loading of vehicles for shipment by haulaway and rules for shipment by driveaway or towaway shall be in accordance with Department of Transportation publication “Federal Motor Carrier Safety Regulations” and applicable military publications.

3.4.3 Reprocessing engine after loading.

3.4.3.1 Level A. If the engine is operated in connection with the moving of vehicle to the loading area or during the loading itself, the engine shall be reprocessed as specified in 3.1.8.6 through 3.1.8.6.4.

3.4.3.2 Level B. If the engine is operated in connection with movement of vehicle for loading or unloading, there shall be no additional processing of engine.

3.5 Marking. In addition to any special marking required in the contract (see 6.2), the vehicle shall be marked in accordance with MIL-STD-129.

3.5.1 Lifting Points The information "LIFT HERE" with an arrow pointing to lifting eye shall be stenciled adjacent to each lifting eye using black ink conforming to A-A-208.

3.6 Drive-on/drive-off capability. When level B processed vehicle is to be operated for loading or unloading, the processed vehicle shall be provided with drive-in/drive-off capability (see 3.6.1, 3.6.2 and 6.2).

3.6.1 Additional fuel. When specified (see 6.2), additional fuel shall be added, as required, to accomplish movement of the vehicle.

3.6.2 Batteries and electrolyte. Batteries shall be filled with electrolyte, fully charged, and battery cables connected. After vehicle self-movement for loading or placement in storage, the battery ground cable on the chassis shall be disconnected. Wrap terminal with tape conforming to type IV of ASTM D5330 and then secure to vehicle chassis with ¾-inch tape conforming to type IV of ASTM D5330. A warning tag, bearing the information "VEHICLE PRESERVED FOR DRIVE-AWAY CONDITION. BEFORE CRANKING, CONNECT GROUND CABLE TO VEHICLE CHASSIS. ENGINE AND FUEL TANK NOT PRESERVED.", shall be attached in a conspicuous location within the driver's compartment.

3.6.3 Air intake grill. The wire on the hardboard cover (figure 4) shall be loosened in two places and raised back for loading and unloading. Following loading and unloading the hardboard cover shall be resecured.

4. VERIFICATION

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order (see 6.2), the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the government. The Government reserves the right to perform or witness any of the inspections set forth in the purchase description where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.1.1 Responsibility for compliance. All items must meet all requirements specified in this purchase description. The inspection set forth this purchase description shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in the purchase description shall not relieve the contractor of the responsibility of assuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling inspection, as part of manufacturing operations in an acceptable practice to ascertain conformance to requirements, however this does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to acceptance of defective material.

4.2 Classification of inspections. The inspection requirements specified herein are classified as follows:

a. First article inspection (see 4.3).
b. Quality conformance inspections (see 4.6).

4.3 First article inspection. Unless otherwise specified (see 6.2) the Government shall randomly select one of the first ten production processed vehicles produced under the production contract for first article inspection (see 3.1.1). First article sample shall be inspected as specified in table I. Approval of the first article sample by the Government shall not relieve the contractor of his obligation to supply vehicles that are fully representative of those inspected as a first article sample. Any changes or deviations of the production units from the first article sample shall be subject to the approval of the contracting officer.

4.4 Production processed vehicles. Unless otherwise specified (see 6.2), all production processed vehicles shall be subjected to the inspections specified in 4.6.2 through 4.6.2.3.

4.5 Failure. Failure of the first article or any production processed vehicle to conform to the applicable requirements of this purchase description shall be cause for rejection of the vehicles by the Government. No vehicles shall be accepted until objective evidence that the contractor has corrected the condition causing the failure has been provided to the Government.

4.6 Quality conformance inspection.

4.6.1 Materials. Except for the materials that have been inspected by the Government at the source, conformance of all materials used in processing of the vehicles shall be determined by inspection of contractor records providing proof or certification that the materials used conform to the applicable material specifications (see 3.3 and 6.5.2).

4.6.2 Processing. Except as otherwise specified herein, vehicle processing shall be inspected to determine conformance to this purchase description. Inspection of processing shall include all items specified in table I and 4.6.2.1 through 4.6.2.4.

TABLE I. First article and QCI inspection
(See indicated paragraphs for Levels A & B requirements)

Component	Cleaning	Preservation		Packaging/Stowage	
	Levels A & B	Level A	Level B	Level A	Level B
Disassembly				3.1.5	3.1.5
Side view mirror				3.1.5.1	3.1.5.1
Matchmarking				3.1.5.3	3.1.5.3
Interior of vehicle	3.1.7.1				
Battery supports and retainers	3.1.8.2	3.1.8.2	3.1.8.2		
Backrests & seats	3.1.7.1.2			3.1.9.3	3.1.9.3
Exterior of vehicle	3.1.7.2				
Relubrication		3.1.8.1	3.1.8.1		
Transmission and final drives 1/		3.1.8.3	3.2.1		
Cooling system 1/		3.1.8.4	3.1.8.4		
Water and antifreeze procedures		3.1.8.4.1	3.1.8.4.1		
Water and corrosion inhibitor procedure		3.1.8.4.2	3.1.8.4.2		
Arctic antifreeze procedure		3.1.8.4.3	3.1.8.4.3		

TABLE I. First article and QCI inspection- continued.
(See indicated paragraphs for Levels A & B requirements)

Component	Cleaning	Preservation		Packaging/Stowage	
	Levels A & B	Level A	Level B	Level A	Level B
Engine crankcase 1/		3.1.8.5	3.2.2		
Compression ignition engine		3.1.8.6	3.2.3.		
Preservation thru fuel system and combustion chamber		3.1.8.6.2	3.2.3		
Preservation thru exhaust and air intake system		3.1.8.6.3	3.2.3		
Preservation thru oil level gage rod opening 1/		3.1.8.6.4	3.2.3		
Hydraulic reservoir		3.1.8.7	3.1.8.7		
Personnel heater and fuel lines		3.1.8.8.	3.2.4		
Fuel tank		3.1.8.9	3.2.5		
Hatches & doors		3.1.8.10	3.1.8.10	3.1.8.10	
Drain plugs				3.1.8.11.1	3.1.8.11.1
Miscellaneous preservation		3.1.8.12	3.1.8.12		
Dry charged batteries and cables		3.1.9.1	3.1.9.1	3.1.9.1	3.1.9.1
Electrolyte				3.1.9.2	3.1.9.2
Backrests and seats				3.1.9.3	3.1.9.3
Fire extinguisher				3.1.9.4	3.1.9.4
BII				3.1.9.5	3.1.9.5
Stowage and securement of BII				3.1.9.5.1	3.1.9.5.1
Windshield and door windows				3.1.9.7	3.1.9.7
Air intake grille				3.1.9.8	3.1.9.8
Fuel tank security				3.1.8.9.1	3.1.8.9.1
Engine fuel shut off				3.1.8.9.2	3.1.8.9.2
Record forms				3.1.6	3.1.6

TABLE I. First article and QCI inspection- continued.
(See indicated paragraphs for Levels A & B requirements)

Component	Cleaning	Preservation		Packaging/Stowage	
	Levels A & B	Level A	Level B	Level A	Level B
Flat top loading				3.4.1	3.4.1
Highway shipment				3.4.2	3.4.2
Reprocessing engine after loading				3.4.3.1	3.4.3.1
Marking				3.5	3.5
Lifting points				3.5.1	3.5.1

1/ Inspect DA Form 2258 (see 3.1.6).

4.6.2.1 Cleaning. To determine conformance to 3.1.7.1, the interior of vehicle shall be examined for cleanliness. One vehicle each day shall be tested for cleanliness in accordance with the applicable provisions of MIL-STD-2073-1. To determine conformance with 3.1.7.2, the exterior of vehicle shall be examined for cleanliness. Surfaces on which tape is to be applied shall be examined for cleanliness before application.

4.6.2.2 Fuel tank. To determine conformance to 3.1.8.9, visual inspection of preservation application shall be accomplished.

4.6.2.3 Cooling system. To determine conformance to 3.1.8.4, one processed vehicle shall be selected at random from each day's production. The engine coolant shall be tested using a hydrometer-thermometer type tester, with a range of minus 60 to plus 160°F, conforming to MIL-T-37402.

4.6.2.4 Engine. To determine conformance to 3.1.8.6.1 through 3.1.8.6.4, the interior of engine randomly selected from 1 of the first 10 production processed vehicles shall be examined for surface coverage. The engine shall be disassembled to the extent necessary to permit visual examination of all surfaces within the combustion chamber. (NOTE: The combustion chamber shall be considered as all surfaces within the cylinder, from and including the crown of the piston, to and including the surfaces of the head within the cylinder. All surfaces within the combustion chamber shall have a "wet" coating of preservative oil such as is obtained when the item is dipped or flushed with the oil.

5. PACKAGING

This section is not applicable to this purchase description.

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. Vehicle processing covered by this purchase description is intended to protect the vehicles for storage outside of buildings, for immediate use shipment, and for domestic or overseas shipment, including carloading.

6.2 Acquisition requirements. Acquisition documents has to specify the following:

a. Title, number, and date of this purchase description.
b. Applicable level of processing (see 1.2).
c. Issue of DODISS to be to be cited in the solicitation and, if required, the specific issue of individual documents referenced (see 2.2 and 2.3).
d. If first article inspection is not required (see 3.1.1).
e. If records of vehicle processing is required (see 3.1.4).
f. Applicable procedure for protection of cooling system (see 3.1.8.4).
g. If BII should be processed, packed, or stored other than as specified (see 3.1.9.5).
h. If residual fuel has to be drained from the fuel tank prior to shipping (see 3.2.5).
i. If special marking is required (see 3.5).
j. If vehicle drive-on and drive-off capability is required (see 3.6).
k. If additional fuel has to be supplied (see 3.6.1).
l. If responsibility for inspection has to be other than as specified (see 4.1).
m. If first article sample size has to be other than as specified (see 4.3).
n. If conformance inspection vehicles has to be subjected to inspections other than as specified (see 4.4).

6.3 Safety precautions. Caution should be exercised in handling carbon dioxide (CO2) fire extinguisher cylinders. Cylinders should not be dropped, permitted to strike each other, or handled roughly. Extreme care should be exercised during the reinstallation operation to avoid tripping the fire extinguisher control trigger (see 3.1.9.4).

6.4 Forms. A copy of the “Equipment Log Book” and all required forms (see 3.1.6) will be furnished to the contractor by the Government as least 30 days before shipment of the vehicles required by the contract delivery schedule.

6.5 Definitions.

6.5.1 Packing. The application or use of adequate protective measures to prevent deterioration including, as applicable, the use of appropriate cleaning procedures, preservatives, protective wrappings, cushioning, containers, and complete identification marking.

6.5.2 Recovered materials. "Recovered materials" means materials that have been collected or recovered from solid waste (see 6.5.3).

6.5.3 Solid waste. "Solid waste" means (a) any garbage, refuse, or sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility; and (b) other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities. It does not include solid or dissolved material in domestic sewage, or solid or dissolved material in irrigation returns flows or industrial discharges which are point sources subject to permits under section 402 of the Clean Water Act, (33 U.S.C. 1342 et seq.), or source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 U.S.C. 2011 et seq.). (Source: Federal Acquisition Regulations, section 23.402).

6.6 Subject term (key word) listing.

Antifreeze	Fire extinguisher packaging
Backrests preservation	Fuel system preservation
Battery packaging	Highway shipment
Battery supports and retainers	Level A protection
BII packaging	Level B protection
Cleaning vehicle	Packaging
Cooling system preservation	Preservation
DA Form 2258	Rail shipment
Drying	Recovered material
Engine preservation	Seats preservation
Final drives preservation	Transmission preservation

6.7 Changes from previous issue. Asterisks are not used in this revision to identify changes with respect to the previous issue, due to the extensiveness of the changes.

6.8 AMC policy on AQLs/LTPDs. This purchase description is certified to be in compliance with current Army Material Command (AMC) policy for the elimination of AQLs/LTPDs (Acceptable Quality Levels/Lot Tolerance Percent Defectives) from military specifications.

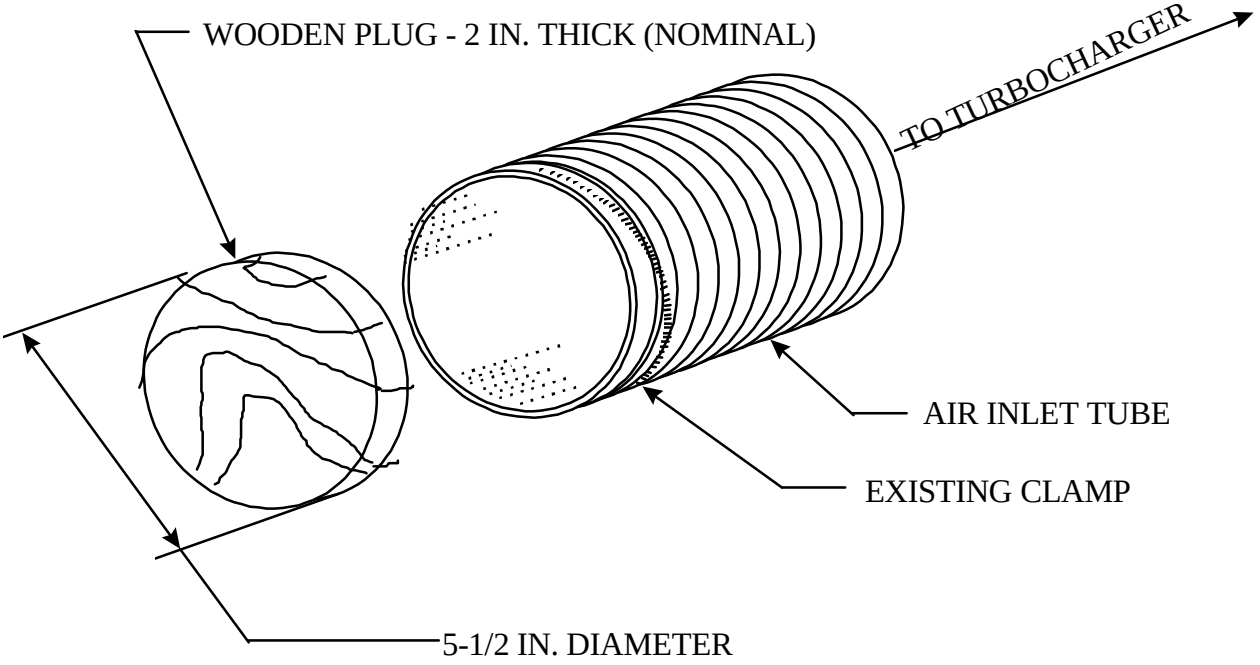

FIGURE 1. Air duct restrictor plug.

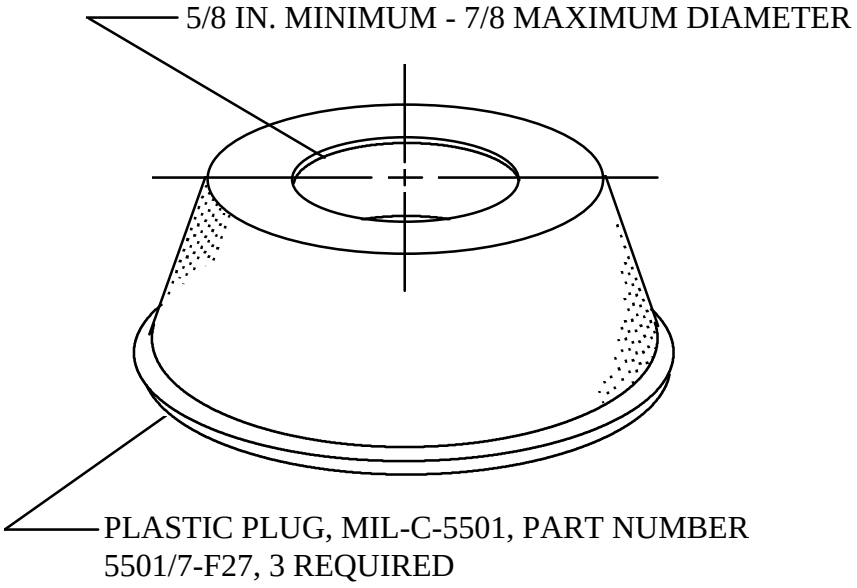

FIGURE 2. Hull drain opening reducer.

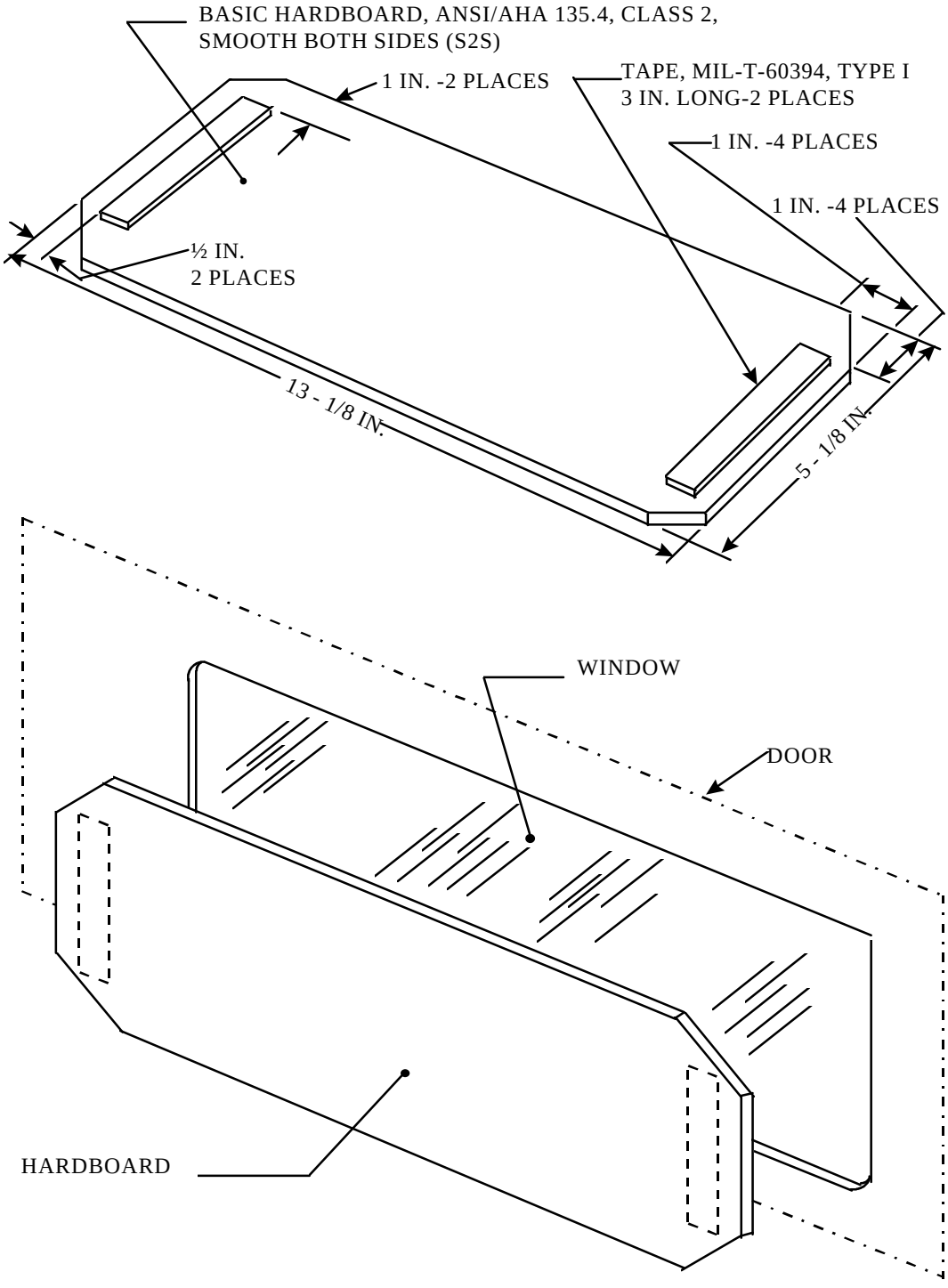

FIGURE 3. Hardboard window covering.

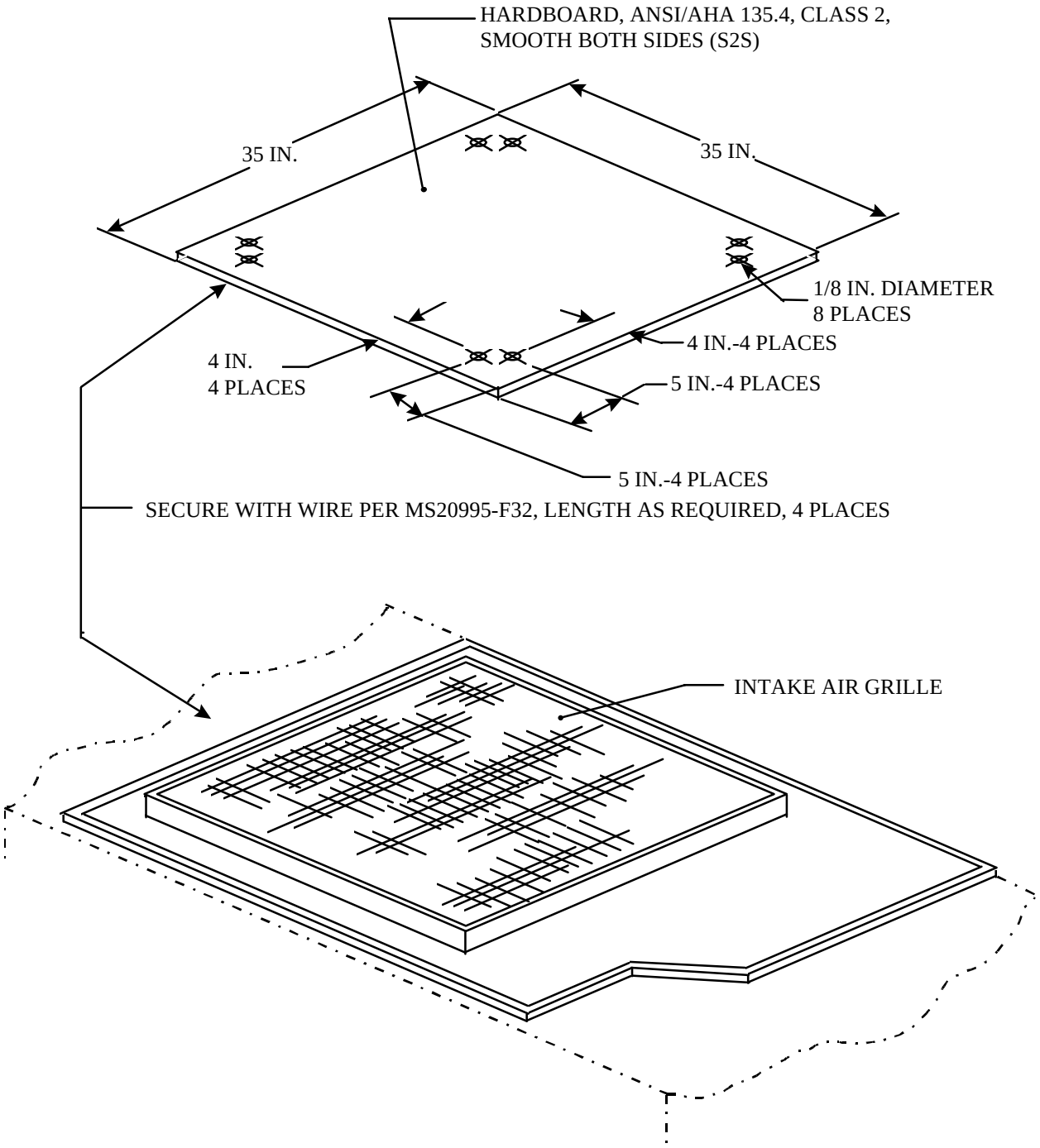

FIGURE 4. Air intake grill.